

CLAIMS:

1. A computer assisted method of assessing personalized  
5 supplement requirements for a human subject comprising:
  - (i) providing a first dataset on a data processing means,  
said first dataset comprising information correlating the presence  
of individual alleles at genetic loci with a lifestyle risk factor,  
wherein at least one allele of each genetic locus is known to be  
10 associated with increased or decreased disease susceptibility;
  - (ii) providing a second dataset on a data processing means,  
said second dataset comprising information matching each said risk  
factor with at least one supplement
  - (iii) inputting a third dataset identifying alleles at one or  
15 more of the genetic loci of said first dataset of said human  
subject;
  - (iv) determining the risk factors associated with said alleles  
of said human subject using said first dataset;
  - (v) determining at least one appropriate supplement  
20 recommendation based on each identified risk factor from step (iv)  
using said second dataset; and
  - (vi) generating a personalized assessment of supplement  
requirements based on said recommendations.
- 25 2. A method according to claim 1 wherein the supplement is a  
nutrient or therapeutic supplement.
3. A method according to claim 1 wherein the assessment includes  
recommended minimum and/or maximum amounts of each supplement  
30 identified in step (v).
4. A method according to claim 1 comprising producing a report  
comprising said personalized assessment.

5. A method according to claim 4 comprising the step of delivering the report to the client.

6. A method according to claim 1 wherein said assessment  
5 comprises a recipe for a personalised supplement formulation

7. A method according to claim 6 wherein the supplement formulation comprises said at least one supplement determined in step (v).

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8. A method according to claim 7 comprising preparing said personalized supplement formulation.

9. A method according to claim 1 comprising preparing a kit  
15 comprising individual preparations of the at least one supplements determined in step (v).

10. A method according to any one of claims 5 to 8 wherein the formulation is a nutritional formulation for oral administration or  
20 a therapeutic formulation for topical administration.

11. A method according to claim 9 or claim 10 comprising providing and/or delivering the formulation or kit to the individual.

25 12. A method according to claim 1 wherein said first dataset comprises information relating to two or more alleles of one or more genetic loci of genes selected from the group comprising:  
(a) phase I metabolism enzymes responsible for detoxification of xenobiotics,  
30 (b) genes that encode Phase II metabolism enzymes responsible for further detoxification and excretion of xenobiotics,  
(c) genes that encode enzymes that combat oxidative stress,  
(d) genes associated with micronutrient deficiency,  
(e) genes that encode enzymes responsible for metabolism of alcohol,

(f) genes that encode enzymes involved in lipid and/or cholesterol metabolism,

(g) genes that encode enzymes involved in clotting,

(h) genes that encode trypsin inhibitors,

5 (i) genes that encode enzymes related to susceptibility to metal toxicity,

(j) genes which encode proteins required for normal cellular metabolism and growth,

(k) genes which encoded HLA Class 2 molecules,

10 (l) genes that encode proteins involved with inflammation processes and,

(m) genes involved in calcium metabolism and bone growth and maintenance.

15 13. A method according to claim 12 wherein said first dataset comprises information relating to two or more alleles of one or more genetic loci of genes encoding an enzyme selected from the group comprising: cytochrome P450 monooxygenase, N-acetyltransferase 1, N-acetyltransferase 2, glutathione-S-transferase, manganese superoxide  
20 dismutase, 5,10-methylenetetrahydrofolatereductase and alcohol dehydrogenase 2.

14) A method according to claim 12 wherein said first dataset comprises information relating to two or more alleles of the genetic  
25 loci of genes encoding the enzymes: 5,10-methylenetetrahydrofolate reductase (MTHFR), methionine synthase (MTR), methionine synthase reductase (MTRR), cystathione beta synthase (CBS), vitamin D receptor (VDR), collagen type I alpha (COL1A1), interleukin 6 (IL-6), tumour necrosis factor alpha (TNF $\alpha$ ), angiotensin converting  
30 enzyme (ACE), peroxisome proliferators activated receptor (PPAR-gamma 2), manganese superoxide dismutase (SOD2), extracellular superoxide dismutase (SOD3), glutathione S-transferase M1 (GSTM1), glutathione S-transferase theta1 (GSTT1), glutathione S-transferase pi (GSTP1), apolipoprotein C-III (APOC3), cholesteryl ester transfer

protein (CETP), lipoprotein lipase (LPL), endothelial nitric oxide synthase (eNOS), factor 5 (F5) and apolipoprotein E (ApoE4).

15. A method according to any one of the preceding claims  
5 comprising the step of determining the presence of individual alleles at one or more genetic loci of the DNA in a DNA sample of said human subject, and constructing the dataset used in step (iii) using results of said determination.

10 16. A method according to claim 15 wherein said presence of said individual alleles is determined by hybridisation with allele-specific oligonucleotides.

15 17. A method according to claim 16 wherein said allele specific oligonucleotides are selected from oligonucleotides each specific for one of the genes selected from the group comprising the CYP1A1 gene, the GST $\mu$  gene, the GST $\pi$  gene, the GST $\theta$  gene, the NAT1 gene, the NAT2 gene, the MnSOD gene, the MTHFR gene and the ALDH2 gene.

20 18. A method according to claim 1 comprising the additional steps;  
(vii) providing a fourth dataset on a data processing means, said fourth dataset comprising information matching each said risk factor with at least one lifestyle recommendation;  
(viii) determining at least one appropriate lifestyle  
25 recommendation based on each identified risk factor from step (iv) using said fourth dataset; and  
(viii) generating a personalized lifestyle advice plan based on said lifestyle recommendations.

30 19. A method according to claim 18 comprising producing a report comprising said personalized lifestyle advice plan and said personalized assessment of supplement requirements.